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What is claimed is:

Claim 1. A method for treatment of groundwater in a subterranean formation and contaminated by the presence of dissolved volatile organic compounds (VOC'S) which comprises:

establishing a well extending from the ground surface to a downhole location adjacent contaminated groundwater in the subterranean formation in order to allow withdrawal of contaminated groundwater to the surface through the well for treatment;

conducting contaminated groundwater from the downhole location through the well to the surface;

stripping the contaminated groundwater by expanding the flow in an inline stripper to induce transfer of VOC's from the contaminated groundwater to a vapor phase; and

separating the groundwater and the vapor phase into substantially liquid only and substantially vapor only process stream.

Claim 2. The method of Claim 1 wherein the groundwater withdrawn through the well is withdrawn to the surface for treatment as a two-phase fluid having a substantially liquid portion and a substantially vapor portion to promote separation of VOC's to the vapor phase.

Claim 3. The method of Claim 1 further comprising separating VOC'S from the vapor process stream.

Claim 4. The method of Claim 1 wherein a subatmospheric pressure is imposed upon the groundwater within the well to promote withdrawal of the same to the surface and separation of VOC's.

Claim 5. The method of Claim 1 wherein the VOC'S comprise methyl tertiary butyl ether (MtBE).

Claim 6. The method of Claim 1 wherein at least about 80% of the VOC'S are stripped from the groundwater to the vapor phase in a single pass.

Claim 7. The method of Claim 1 wherein the groundwater flow is accelerated in the inline stripper and then released into a relatively low pressure area to induce transfer of VOC's into the vapor phase.

Claim 8. The method of Claim 7 further comprising injecting compressed air into the groundwater flowing through the inline stripper.

Claim 9. The method of Claim 1 wherein the groundwater and vapor phases are separated in a knockout vessel.

Claim 10. The method of Claim 1 further comprising repeating the step of stripping the contaminated groundwater by passing the stripped groundwater from the inline stripper through at least one additional inline stripper.

Claim 11. The method of Claim 1 further comprising recycling at least a portion of the stripped groundwater from the inline stripper to the contaminated groundwater withdrawn to the surface and restripping the same together with the contaminated groundwater in the inline stripper.

Claim 12. An apparatus for treatment of groundwater in a subterranean formation, said groundwater being contaminated by the presence of VOC's, including VOC's dissolved in the groundwater comprising:

at least one well extending from the ground surface to a downhole location adjacent contaminated groundwater in the subterranean formation in order to allow withdrawal of contaminated groundwater through the well to the surface through the well;

a stripper unit containing an inline stripper connected in flow communication with the well for stripping the VOC's from the contaminated groundwater by means of expansion of the flow in the inline stripper inducing transfer of VOC's from the groundwater to a vapor phase so that the material flow exiting the stripper contains a vapor phase enriched in VOC's and a liquid phase depleted in VOC's;

means for causing a flow of contaminated groundwater from the subterranean formation into and through the well to the surface and through the inline stripper of the stripper unit; and

a collector connected in flow communication with the material exiting the inline stripper for collecting the liquid phase and the vapor phase in separate substantially liquid only and a substantially vapor only phases.

Claim 13. The apparatus of Claim 12 wherein the groundwater withdrawn through the well is extracted as a part of a two-phase fluid having a substantially liquid portion and a substantially vapor portion.

Claim 14. The apparatus of Claim 12 further comprising a vacuum source connected in flow communication with the well and the stripper unit for imposing a subatmospheric pressure upon the groundwater through the well to induce a flow of groundwater from the subterranean formation through the well to the surface, and into and through the inline stripper.

Claim 15. The apparatus of Claim 12 wherein the VOC's comprise methyl tertiary butyl ether (MtBE).

Claim 16. The apparatus of Claim 12 wherein the inline stripper is configured to cause at least about 80% of the VOC's to be removed from the groundwater to the vapor phase in a single pass through the stripper.

Claim 17. The apparatus of Claim 12 wherein the inline conveyance stripper comprises a flow through conduit having an inlet into which groundwater flows and an exit from which the vapor and liquid phases pass to the collector and wherein the conduit includes a flow expander section downstream of the inlet through which groundwater flows and is released into an expanded cross-sectional area such that, upon entering the expanded cross-sectional area, a turbulence, mixing, and misting of the flow is induced to promote separation of the VOC's from the groundwater into the vapor phase.

Claim 18. The apparatus of Claim 17 further comprising a source of compressed gas connected in flow communication with the inline stripper for introducing a flow of compressed gas into the stripper conduit in the expander section upstream of the expanded cross-sectional area in order to further promote separation of VOC's from the groundwater into the vapor phase.

Claim 19. The apparatus of Claim 12 wherein the collector comprises a knockout vessel into which material is passed and being configured and dimensioned to promote separation of the liquid and vapor phases by the force of gravity acting upon the liquid phase.

Claim 20. The apparatus of Claim 12, further comprising a plurality of inline strippers.

Claim 21. A method for treating groundwater from a subterranean formation wherein the groundwater is contaminated by the presence of dissolved volatile organic compounds (VOC's) which comprises conducting a flow of the groundwater through a stripper conduit wherein the groundwater flow is expanded to promote separation of VOC's from the groundwater by being rapidly decelerated from a first flow velocity to a substantially lower flow velocity than the first flow velocity in an expanded cross-sectional area of the stripper conduit containing a gas space and wherein deceleration of the flow velocity of the groundwater upon entering the expanded cross-sectional area causes substantially increased turbulence, mixing, and misting of the groundwater to induce transfer of dissolved VOC's from the groundwater to gas in the gas space within the expanded area so that the expanded area of the conduit contains a two-phase flow comprising a flowing liquid phase with a reduced VOC content compared to that of the entering groundwater and a flowing gas phase including VOC's transferred thereto from the groundwater entering the expanded area and, thereafter, conducting the flowing liquid and gas phases from the stripping conduit into a collector vessel and effectively separating and collecting the liquid and gas phases into separate and distinct substantially liquid and substantially vapor only flow streams exiting the collector vessel for further treatment and/or disposal.

Claim 22. The method of Claim 21 wherein the VOC's include methyl tertiary butyl ether (MtBE) and wherein at least a substantial portion of the MtBE is transferred from the groundwater to the gas phase.

Claim 23. The method of Claim 21 wherein the ratio of the flow velocities of the first flow velocity and the lower flow velocity is from about 1.5 to about 10.

Claim 24. The method of Claim 21 further comprising accelerating the flow of groundwater in the stripper conduit to the first flow velocity from a first relatively lower flow velocity of groundwater entering the stripper conduit.

Claim 25. The method of Claim 21 wherein the flow velocity is accelerated to the first flow velocity by conducting the groundwater through a reduced cross-sectional area in relation to the cross-sectional area of the stripper conduit in an expander section upstream thereof carrying groundwater flowing at the first relatively lower flow velocity and in relation to the expanded cross-sectional area of the stripper conduit containing a gas or vapor space downstream of the reduced cross-sectional area.

Claim 26. The method of Claim 21, further comprising pumping groundwater from the subterranean area into the stripper conduit so that groundwater flowing into the expanded cross-sectional area is under greater than atmospheric pressure.

Claim 27. The method of Claim 21, further comprising injecting compressed gas into the groundwater flowing in the stripper conduit at a location in the conduit upstream of the expanded cross-sectional area.

Claim 28. The method of Claim 21 wherein the compressed gas comprises compressed air at a pressure in the range of from about 20 to about 150 psig.

Claim 29. The method of Claim 28 wherein the compressed gas is supplied at a volumetric flow ratio in relation to the flow of groundwater in the range of from about 10 to about 50 and at a pressure in the range of from about 20 to about 150 psig.

Claim 30. The method of Claim 21, wherein the ratio of the length of the expanded cross-sectional area portion of the stripper conduit in relation to the cross-sectional area just upstream thereof is in the range of from about 5 to about 50.

Claim 31. The method of Claim 21, wherein the ratio of the cross-sectional area of the expanded area portion of the stripper conduct in relation to the cross-sectional area of the conduit just upstream thereof is in the range of from about 10 to about 30.

Claim 32. The method of Claim 21, further comprising, following separation of the gas and liquid phases, recycling at least a portion of the separated liquid phase so that recycled liquid phase material is mixed with groundwater entering the stripping conduit.

Claim 33. The method of Claim 32, further comprising conducting at least a portion of the groundwater from the stripper conduit through a second stripper conduit arranged in series, flow communication with the first stripper conduit and treating the groundwater in the second stripper conduit in the manner called for in Claim 19.